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Patent claims

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1. A device for producing filter cigarettes (10), in which an outer filter cover - cork paper - has openings (13) which are introduced into the filter cover by a perforation element, in particular by a laser perforation element, the openings (13) being checked by introducing a flowing medium - test air - at one end of the filter (12) and measuring the air - exit air - emerging via the openings (13), characterized by the following feature:

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a) the perforation element is arranged in the region of the device for producing the filter cigarette (10),

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b) the perforation element can be adjusted with regard to the number and/or size of the openings (13) to be made in the filter cover,

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c) results of the measurement of the exit air in the region of the openings (13) can be supplied to a computer (44),

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d) the perforation element is connected to the computer (44) and, by means of the latter, the number of openings (13) to be made and/or the size of the same can be adjusted in accordance with the measured results.

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2. The device as claimed in claim 1, characterized in that a control device, in particular the computer (44), for adjusting the perforation element, in particular the laser perforation element (17), is connected to a (central) machine control system

(51) of the device for producing the filter cigarettes.

3. The device as claimed in claim 1 or 2,
5 characterized in that the air exit in the region of the openings (13) of the filters (12) can be measured continuously or cyclically, and the measured results can be introduced into a control loop for adjusting the (laser) perforation element
10 (17), it preferably being possible for the pressure of the exit air emerging in the region of the openings (13) to be measured by pressure meters (46) and for signals to be supplied by the latter to the computer (44).
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4. The device as claimed in claim 1 or one of the further claims, characterized in that the filter cover of the filter (12), consisting of cork paper, and for connecting said filter to the
20 cigarette is formed from a continuous material web (54) by dividing it off and can be joined to the filter and the cigarette in the region of a roll unit (55), the (laser) perforation unit (17) being fitted in the region of the material web (54) of
25 the cork paper, above the latter, in order to produce openings (13) for a cork paper respectively assigned to a cigarette in the region of the material web (54).
- 30 5. The device as claimed in claim 1 or one of the further claims, characterized in that the (laser) perforation element (17) for making openings (13) on finished filter cigarettes (10) provided with cork paper is arranged above an intermediate drum
35 (16) for transporting the cigarettes (10).
6. The device as claimed in claim 1 or one of the further claims, characterized in that, following the making of the openings (13), the filter

cigarettes (10) provided with openings (13) can be supplied to a testing unit, in particular a testing drum (18) having hollows (19) each for holding a filter cigarette (10), the hollows (19) of the testing conveyor or the testing drum (18) having at least one testing chamber (22) in the region of the filter (12) of the filter cigarettes (10) and it being possible for compressed air to be supplied to the cigarettes in the axial direction via a free end of the filter and to enter the testing chamber (22) via the openings or holes, and in that a pressure meter (46) is connected to the testing chamber (22) via an exit line (45) and passes on the measured pressures as a signal to the computer (44).

7. The device as claimed in claim 6, characterized in that separate sealing elements are assigned to the testing conveyor or the testing drum (18) and, in the region of the testing of the filter cigarettes (10), can be placed on the latter in order to form a totally closed, sealed testing chamber (22) in the region of the filter (12).

8. The device as claimed in claim 7, characterized in that the sealing elements for the free outer side of the filter cigarettes (10) to be tested are fitted to a sealing conveyor (21), which rests on the free outer circumference of the testing drum (18), at least during the testing of the filter cigarettes (10), and has partitioning or sealing elements for each filter cigarette (10) in order to form a testing chamber (22).

9. The device as claimed in claim 8, characterized in that the sealing conveyor (21) has hollows, namely matching hollows (34) which, during the testing of the filter cigarettes (10), together with the hollows (19) of the testing drum (18), form a

hollow space which is closed, at least in the subregion, namely a testing chamber (22), webs (24) of the hollows (19) of the testing drum (18) being assigned matching hollows (34) of the sealing conveyor (21).

10. The device as claimed in claim 7, characterized in that the sealing conveyor (21) consists overall of resilient material, namely a pulling run (38) which can be loaded and a sealing layer (39) which is fitted to the latter and has the matching hollows (34).
11. The device as claimed in claim 6 or one of the further claims, characterized in that testing regions or testing chambers (22, 23) are sealed off at the ends by resilient closure elements, in particular by caps (25, 26) of resilient material, which are placed in a sealing manner on ends of the filter cigarette (10), it being possible for the caps (25, 26) to be placed on the filter cigarettes (10), preferably as the filter cigarettes (10) are fed to the testing drum (18), and hold the filter cigarettes (10) on the circumference of the testing drum (18) and in the hollows (19).
12. The device as claimed in claim 6 or one of the further claims, characterized in that sealing elements, in particular movable (pivotal) sealing pieces (42), are fitted directly or indirectly to the testing conveyor, in particular to the testing drum (18), and are assigned to each hollow (19), the sealing pieces (42) being formed such that, in an active testing position resting on the testing drum (18), sealed testing chambers (22, 23) are formed in interaction with the hollows (19) of the testing drum (18).

13. The device as claimed in claim 6 or one of the further claims, characterized in that air lines and exit lines (45, 47) branching off from the testing chambers (22, 23) lead to sensors, in particular pressure meters (46) assigned to each line, and in that the sensors or pressure meters (46) are connected to a central computer (44) in order to evaluate the measured data, the computer (44) generating signals for controlling machines, units and elements.